

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/IT2005/000112

International filing date (day/month/year)

28.02.2005

Priority date (day/month/year)

02.03.2004

International Patent Classification (IPC) or both national classification and IPC

H01L35/32, H01L35/10

Applicant

PELTECH S.R.L.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IT2005/000112

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-5
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-5
Industrial applicability (IA)	Yes: Claims	1-5
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: US 2003/193087 A1 (HAYASHI TAKAHIRO ET AL) 16 October 2003 (2003-10-16)
- D2: US-A-5 099 550 (BEANE ET AL) 31 March 1992 (1992-03-31)
- D3: CODECASA M P ET AL: "Optimization of a new thermoelectric cooling assembly using cfd analysis and local modeling of thermoelectric effects" THERMOELECTRICS, 2003 TWENTY-SECOND INTERNATIONAL CONFERENCE ON - ICT LA GRANDE MOTTE, FRANCE AUG. 17-21, 2003, PISCATAWAY, NJ, USA, IEEE, 17 August 2003 (2003-08-17), pages 614-618, XP010697389 ISBN: 0-7803-8301-X
- D4: US-A-4 242 874 (SIMMS ET AL) 6 January 1981 (1981-01-06)

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-5 does not involve an inventive step in the sense of Article 33(3) PCT.

2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document, see Figs. 3-6):

a thermoelectric heat pump (21) comprising one or more thermoelectric modules (21a, 21b) having a hot side connected to a first heat exchanger (23b, Fig. 11 fins 71) and a cold side connected to a second heat exchanger (23a), wherein it comprises a pair of elongated bar-like elements (Fig. 6, 25) made of an electrically and thermally insulating material (25b) which are arranged at two parallel sides (Figs 6 and 7) of the heat exchangers, at least partly interposed between facing flanges of said heat exchangers, at least one of said elongated bar-like elements (25) including electric conductors (25b) for supplying power to the thermoelectric modules (21a, 21b), the elongated bar-like elements being interposed between the heat exchangers so as to break the thermal bridge which otherwise would be formed between one heat exchanger and the

other (pg 0043) .

The subject-matter of claim 1 therefore differs from this known thermoelectric module in that:

- (a) at least one of said elongated bar-like elements (25) includes electric conductors for supplying control signals for the thermoelectric modules.
- (b) said heat exchangers (23a,23b) contacting the thermoelectric modules are linked one another via a plurality of fasteners, each fastener being formed of a substantially C-shaped metal clip and being apt to grip with both ends thereof the facing flanges of the heat exchangers in order to hold them together, at least one of said ends of the fastener gripping a corresponding flange of a heat exchanger indirectly with the interposition of a transverse extension of the elongated bar-like elements.

The problem to be solved by the present invention may therefore be regarded as finding a means for constructing the module so that the heat exchangers can easily be assembled or disassembled

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

- (a) The addition of a conductor for supplying control signals is not an inventive contribution since it is a simple modification for a skilled person. Additional conductors would easily be added in the same place as the conductors 25a.
- (b) The use of C-shaped metal clips to hold a heat exchanger onto a heat producing object is commonly in use in the prior art. For example Document D2 (Figure 3) shows a "C" clip holding a heatsink (heat exchanger) on to a heat source (integrated circuit chip). Therefore the skilled person is aware of existing prior art solutions, and would apply them accordingly.

2.2 Dependent claims 2-5 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, for claims 2 and 3: see D2; for claim 4: see document D3, Figure 1; for claim 5: see document D4.

**WRITTEN OPINION OF THE
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AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IT2005/000112
